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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,384	01/09/2002	Andrew Thomas Daly	A01174A	2092

21898 7590 01/29/2004

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EXAMINER	
BISSETT, MELANIE D	
ART UNIT	**PAPER NUMBER**
1711	

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/040,384	DALY ET AL.	
	Examiner	Art Unit	
	Melanie D. Bissett	1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-10 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,8 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Summary of the Claims

1. Claim 1 is drawn to a powder coating composition comprising (a) an unsaturated polyester resin, (b) a glycidyl acrylic resin, (c) a crystalline or semi-crystalline polycarboxylic acid or polyanhydride, and (d) a free radical initiator. Part (a) contains 2-10% by weight of ethylenically unsaturated bonds, part (b) has a molecular weight M_w of 5,000-200,000, and part (c) has an acid number of 50-400. Claims 2-5 further limit the properties or contents of components (a)-(d). Claims 6-7 are drawn to an article coated by the powder coating of claim 1, claim 8 is drawn to a coating on a substrate containing the coating of claim 1, and claims 9-10 are drawn to a method of coating a heat sensitive substrate comprising applying the coating of claim 1.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kranig et al. in view of Jurgetz et al. Kranig et al. (US 5,639,821) can be found on the applicant's form PTO-1449.

4. Kranig discloses powder coatings comprising (A) an epoxide group-containing resin, (B) a carboxyl group-containing resin, (C) an optional ethylenically unsaturated compound, and (D) 0.1-3.0% by weight of a free-radical initiator (abstract). Preferred

resins for component (A) comprise epoxide group-containing polyacrylate resins made from glycidyl acrylic monomers (col. 2 lines 1-35). Examples show component (A) comprising ~21% by weight of glycidyl methacrylate, although the reference also encompasses 100% glycidyl methacrylate.

5. The reference teaches number average molecular weights of 1,000-15,000 for component (A) (col. 2 lines 53-62). Although weight average molecular weight values are not given, it is the examiner's position that the resins having the cited number average molecular weights would encompass the claimed weight average molecular weights. For example, the cited resin having a M_n value of 15,000 would have a higher value for M_w. Since the applicant claims M_w as high as 200,000 (~13× a value of 15,000), it is the examiner's position that the M_w of the resin would most certainly fall into the applicant's claimed range.

6. Kranig also teaches that the carboxyl group-containing resins (B) are preferably polyester resins having 0-10 (most preferably 0-5) ethylenically unsaturated double bonds per molecule (col. 3 lines 11-41). The reference also prefers a number average molecular weight of (B) of 300-5000, particularly preferably 500-1700 (col. 3 lines 62-67). Assuming an ethylenic double bond molecular weight of ~30g/mol, a material having 1 double bond per molecule would preferably contain ~1.8-6.0% by weight of double bonds (based on preferred M_n). Higher numbers of double bonds would yield higher weight percentages. Thus, the reference teaches the claimed percentage of unsaturation.

7. Kranig also teaches that the powder coatings of the invention are useful for heat-sensitive substrates, including wood (col. 6 lines 17-20). Additional substrates include metal, glass, and plastic. The coatings are applied to the substrates and heated to yield a film coating (col. 8 lines 21-29). Although the reference teaches optional acidic crosslinking agents (col. 5 lines 26-40), the reference does not teach the use of crystalline polycarboxylic acid or anhydride components having the applicant's claimed acid number. Jurgetz teaches powder clear coating compositions comprising epoxy acrylic copolymers and a polycarboxylic acid crosslinking agent (abstract). Crystalline polycarboxylic acids and especially dodecanedioic acid are used as crosslinking agents in amounts of 10-40% by weight to provide improved stability to the powder coating composition (col. 7 lines 22-64). Additionally, the acid component provides improved flow and appearance (col. 7 lines 51-55). Dodecanedioic acid is noted by the applicant as having the claimed acid number. Thus, it is the examiner's position that it would have been prima facie obvious to use crystalline polycarboxylic acids, including dodecanedioic acid, in Kranig's powder coating compositions to improve stability, flow, and appearance of the coatings.

8. Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kranig et al. in view of Jurgetz et al as applied to claims 1-6 and 8-9 above, and further in view of Muthiah et al. Muthiah et al. (US 6,017,640) can be found on the applicant's Form PTO-1449.

9. Kranig and Jurgetz apply as above, where Kranig specifies wood substrates but does not specify medium density fiber board. Also, the references do not teach a method of applying UV radiation after heat to cure the coatings. Muthiah teaches powder coatings for heat sensitive substrates, including medium density fiber board wood composites (abstract). The coatings comprise an unsaturated polyester resin, a crosslinker, a photoinitiator, and a thermal initiator (col. 5 lines 46-67). Medium density fiber boards are known in the art as hard wood substitutes that provide durability at low cost. Muthiah teaches a number of equivalent wood composites useful in cabinetry, shelving, etc. (col. 16 lines 34-54). It is the examiner's position that it would have been prima facie obvious to apply the coatings of Kranig and Jurgetz to a medium density fiber board, since wood substrates are taught. Motivation for choosing the substrate would have been to provide a durable but affordable powder coated substrate useful in cabinetry, shelving, etc.

10. Muthiah also teaches the addition of photoinitiators in combination with thermal initiators and the use of UV radiation to cure the powder coatings at low temperatures (col. 11 line 54-col. 12 line 40). The coatings are first exposed to heat to melt the materials and form a continuous film. Once molten, the coatings are exposed to UV radiation to cure the coatings without excessive use of heat (col. 15 line 24-col. 16 line 32). It is the examiner's position that it would have been prima facie obvious to include a photoinitiator in the coatings of Kranig and Jurgetz and expose the molten coatings to UV radiation. This would provide cured coatings without the need for long heat cure cycles.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie D. Bissett whose telephone number is (571) 272-1068. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

mdb

James J. Seidleck
Supervisory Patent Examiner
Technology Center 1700